



QCT Rackgo X Tioga Pass

Next-Gen OCP Server Refresh

2018/10/15

Agenda

- Overview
- Tioga Pass Chassis Overview
- One Infrastructure with Wide Application Coverage
- Tioga Pass Sled Overview
- One System Design with Flexible Storage Options
- Tioga Pass Sled Mechanical Overview-Front View
- Tioga Pass High Level Features
- Tioga Pass Block Diagram
- Compatible Components List & User Guide
- Design Files Contribution
- OCP Tenets/Principles
- Summary

Overview



- Introduction

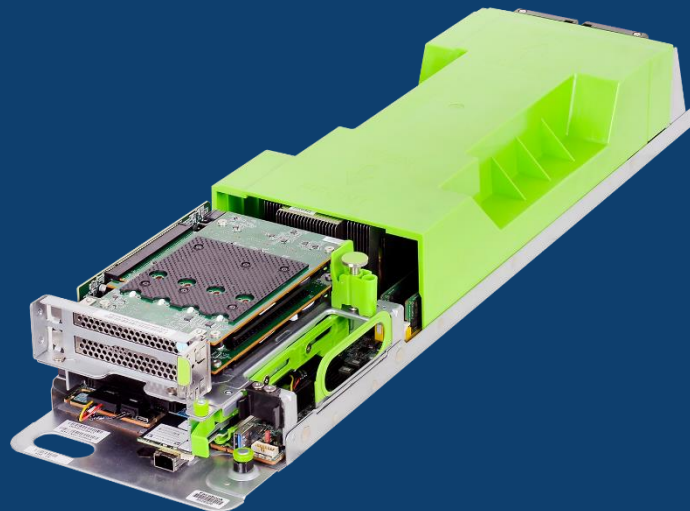
- “QCT Rackgo X Tioga Pass” is next generation OCP general purpose compute server based on the latest Intel® Xeon® Scalable Processor family (aka Skylake-SP) CPU. The baseboard design with single sided SKU, supporting up to 12 DIMMs, which is designed to fit in the OCP Cubby chassis and mounted in ORv2 Rack.

- Contributions

- Design package
- Product submission to Marketplace
 - Product Recognition: Accepted level

- Specification Reference

- Facebook 2S Server Tioga Pass Rev 1.0



Tioga Pass Chassis Mechanical Overview

Uniform Modular Design as Previous Generation



Modular Infrastructure Allows Simplicity and Flexibility
Add or remove building blocks as needed

One Infrastructure with Wide Application Coverage

High Performance Compute Blade
Intel® Xeon® Skylake SP family

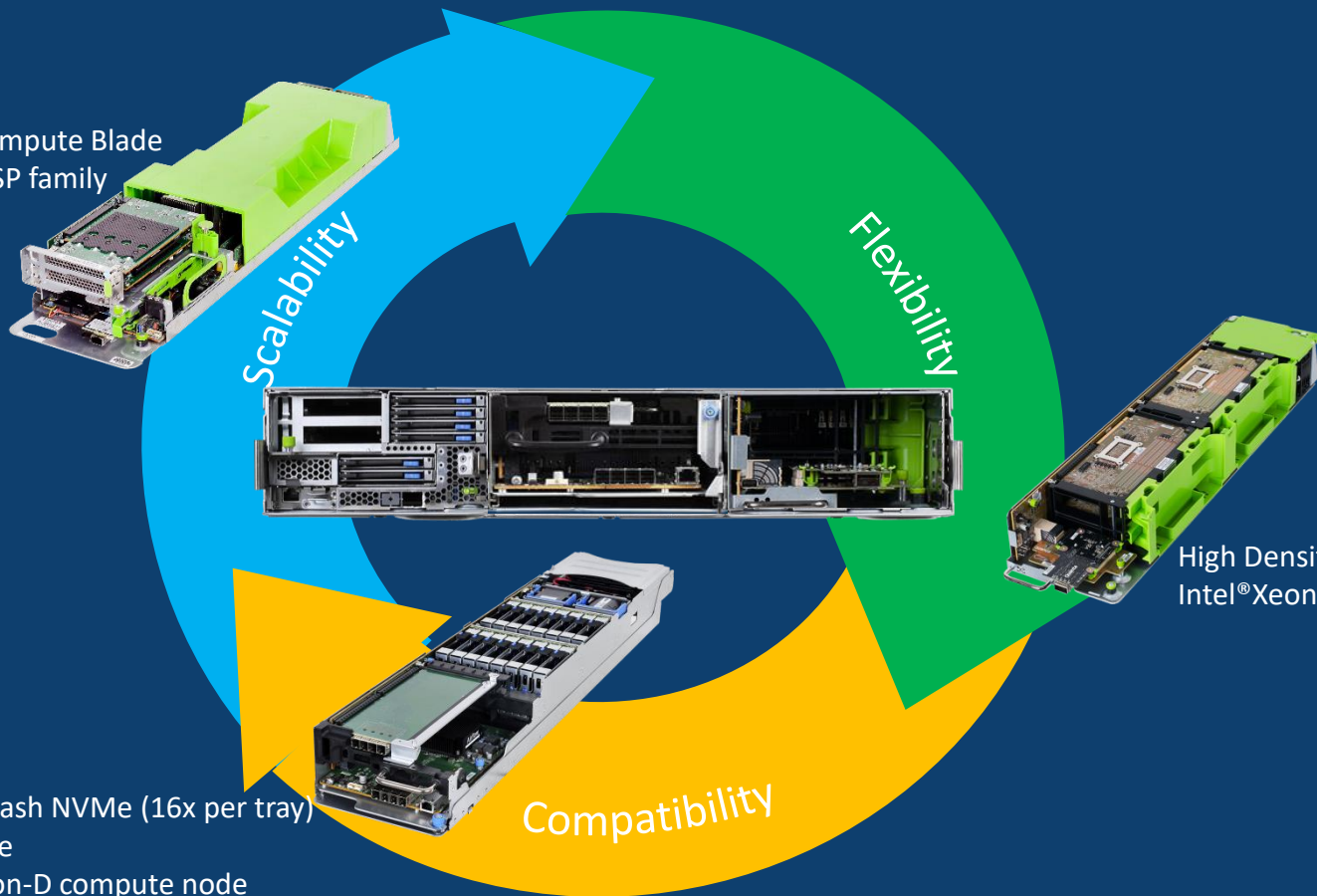
Scalability

Flexibility

High Density Compute uServer
Intel® Xeon® D-1500 family

High Capacity All Flash NVMe (16x per tray)
Intel® P3520 NVMe
optional Intel® Xeon-D compute node

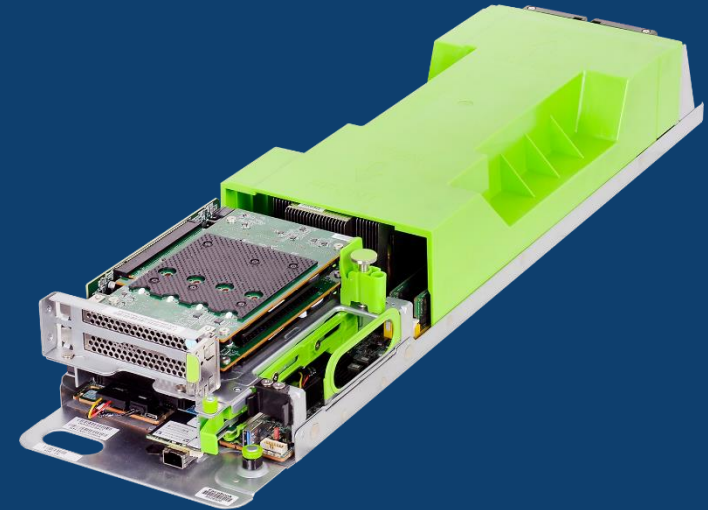
Compatibility



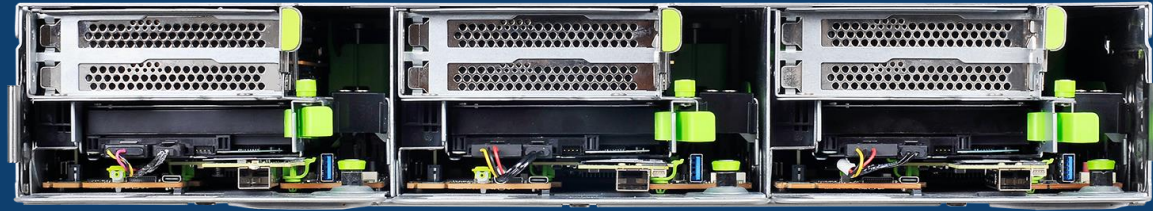
Tioga Pass Sled Overview

OCP Compute Server Refresh

- Intel Next Generation Platform
 - Up to 2 Intel® Xeon® Skylake-SP Processors per Node
 - Up to 12 Memory Modules per Node
- Maximize Performance while Reducing Eco-footprint
 - Eco-Friendly completely Halogen free board and component design
- Uniform Scale-up and Scale-out Building Block
 - Scale out on Capacity and Computing
- High Reliability, Serviceability and Availability
 - Incredible level of business continuousness
- Air Cooling thermal design for existing infrastructure
 - Support up to 165W TDP processor with ambient operating temperature of up to 35°C to reduce operating cost



One System Design with Flexible Storage Options



(Ready/Orderable)

1x LFF drive with 2x FH PCIe slots

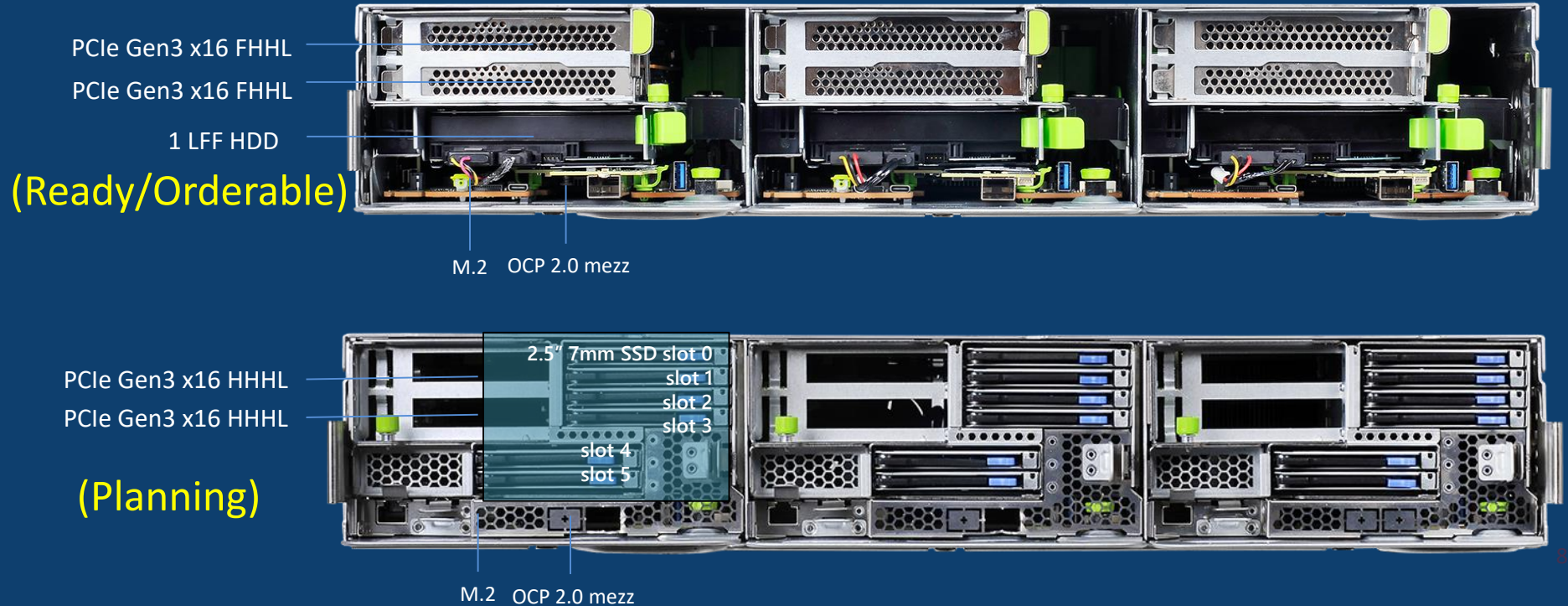


(Planning)

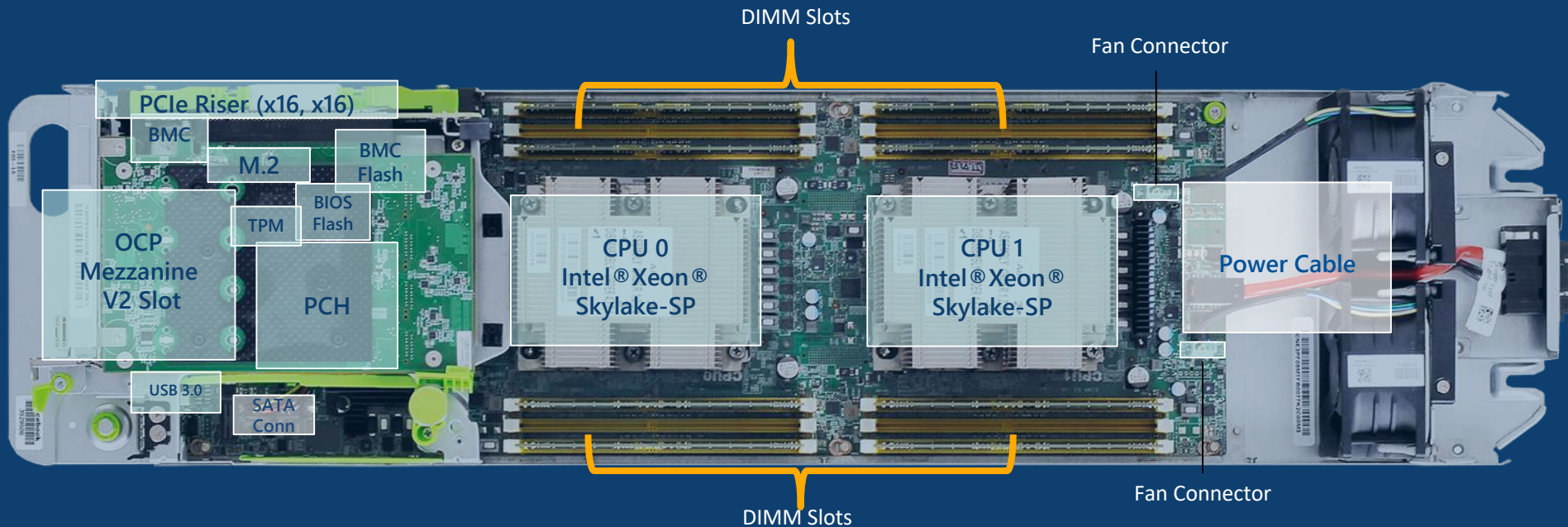
6x SFF drives with 2x HH PCIe slots

Tioga Pass Sled Mechanical Overview

-Front View



Tioga Pass Key Part Placement



Note: This is for whole feature description only,
not all features are available in orderable SKU.

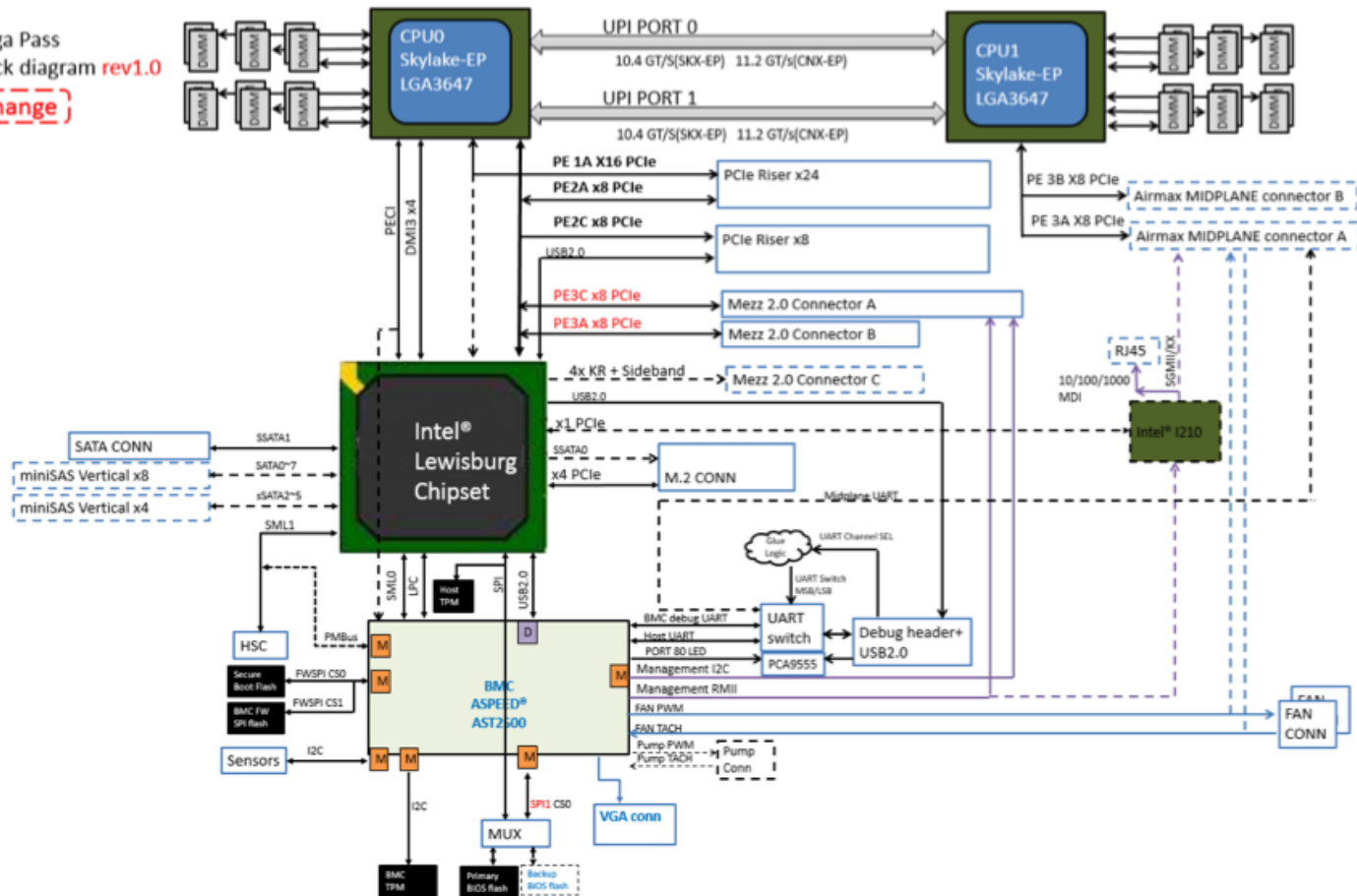
Tioga Pass High Level Features

Feature	Specification
Processor	(2) Intel®Xeon® Skylake-SP processor family per node, up to 165W
Chipset	Intel® C621
Memory	(12) 2666 MHz DDR4 RDIMM per node
Drive Bay	(1) 3.5" fixed drive bays per node(Ready/Orderable) or (6) 2.5" hot swapped drive bays per node(Planning)
Network Controller	Support following QCT OCP mezzanine card (PCIe x16) for network option in front IO per node (1) QCT 1/10GbE RJ45 dual port OCP mezzanine card (1) QCT 10G/25Gb SFP+/SFP28 OCP dual port mezzanine card (1) QCT 40/56G QSFP+ OCP single port mezzanine card (1) QCT 100G QSFP28 OCP single port mezzanine card
Expansion Slot	(2) PCIe gen 3 x16 FHHL PCIe expansion slots per node with 1x LFF drive SKU(Ready/Orderable) (1) PCIe gen 3 x16 OCP mezzanine V2 slot per node or (2) PCIe gen 3 x16 HHHL PCIe expansion slots per node with 6x SFF drive SKU(Planning) (1) PCIe gen 3 x16 OCP mezzanine V2 slot per node
Form Factor	(3) nodes in 2OU (Open Rack) Rackmount
Rack Compatible	Open Rack v2
Onboard Storage	(1) M.2 PCIe/SATA 2280/22110
Management Port	(1) Share NIC from OCP V2 mezzanine card, driven by BMC through RMII/NCSI
Integrated BMC chip	Aspeed AST2500/AST2520
Front I/O	(1) USB 3.0 type A port(debug) (1) USB 3.0 type C port (1) VGA port (with AST2500)

Tioga Pass Block Diagram

Tioga Pass
Block diagram rev1.0

[Change]



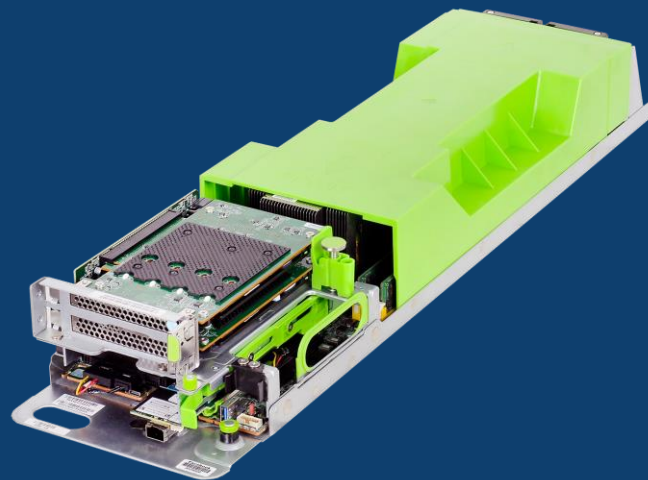
Compatible Components List & User Guide

- “QCT Rackgo X OCP Tioga Pass ” could be operated with
 - Rackgo X OCP Debug Card with LCD
 - Rackgo X OCP AVA-4 M.2 Carrier Card

QCT Rackgo X OCP
Debug Card with LCD



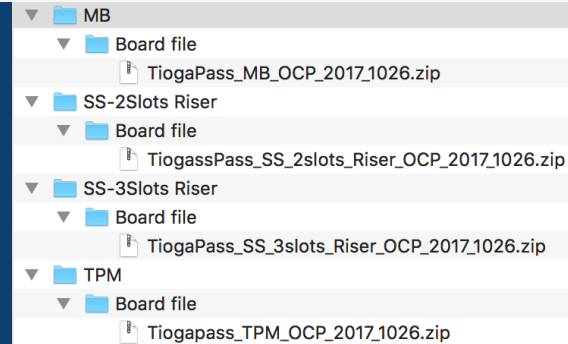
Rackgo X OCP AVA-4
M.2 Carrier Card



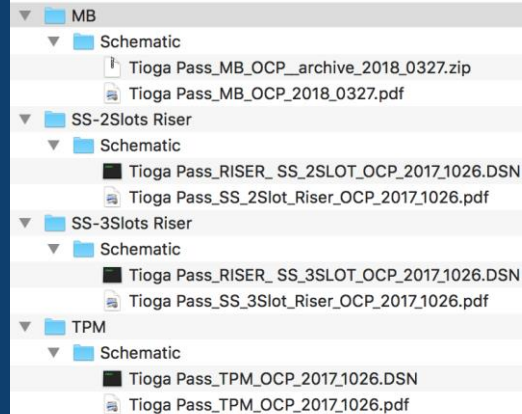
Rackgo X Tioga Pass Sled

Design Files Contribution- 01_Electricals

➤ 01_Full System Board Layout

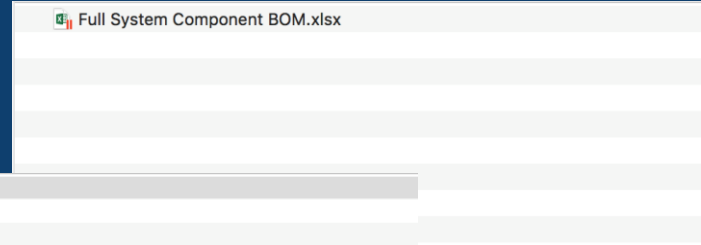


➤ 02_Full System Schematic CAD

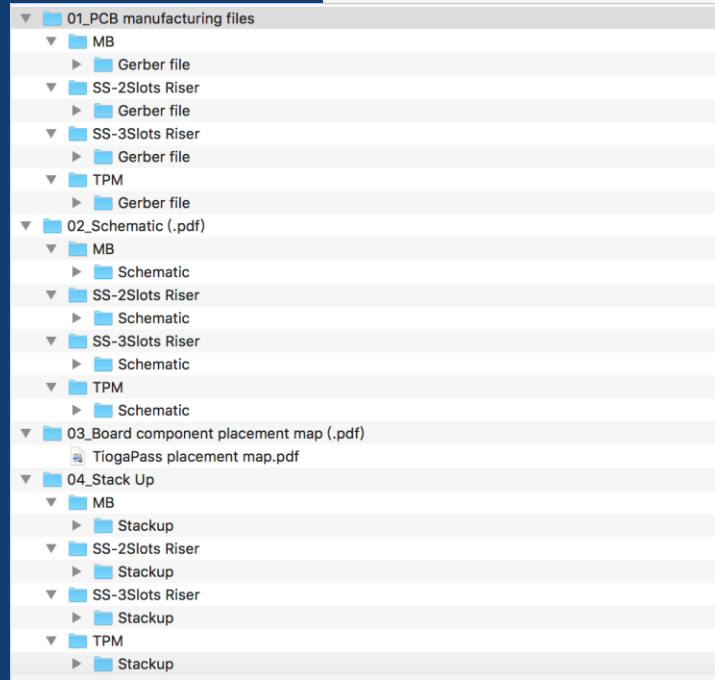


Design Files Contribution- 01_Electricals

➤ 03_Full System Component BOM

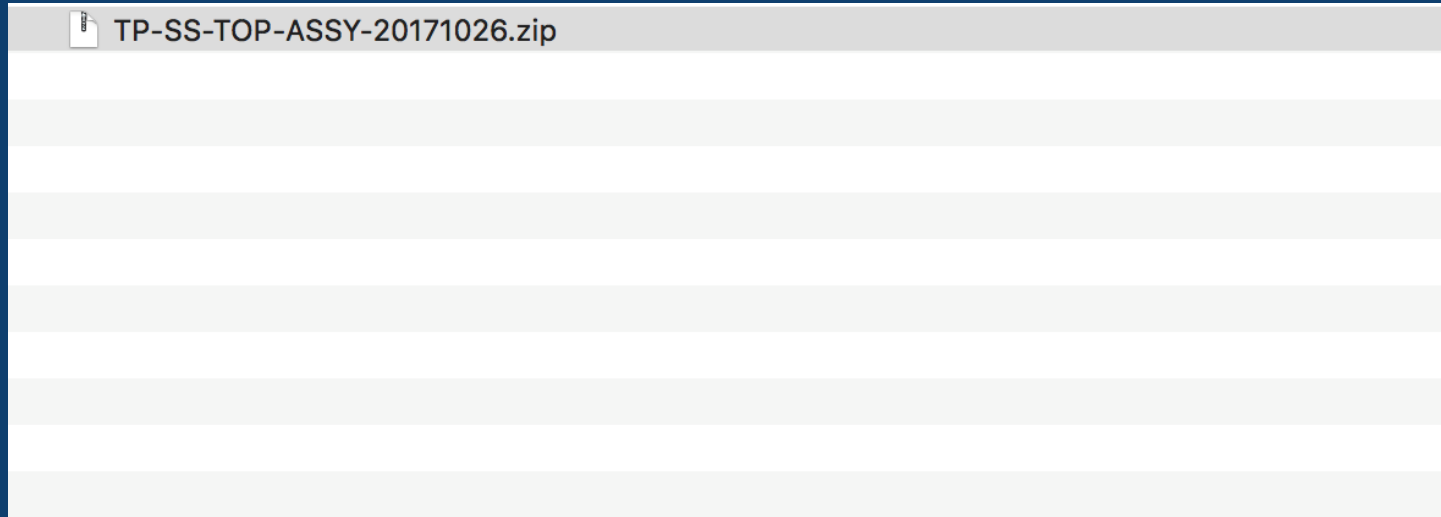


➤ 04_Manufacturing Files



Design Files Contribution- 02_Mechanicals

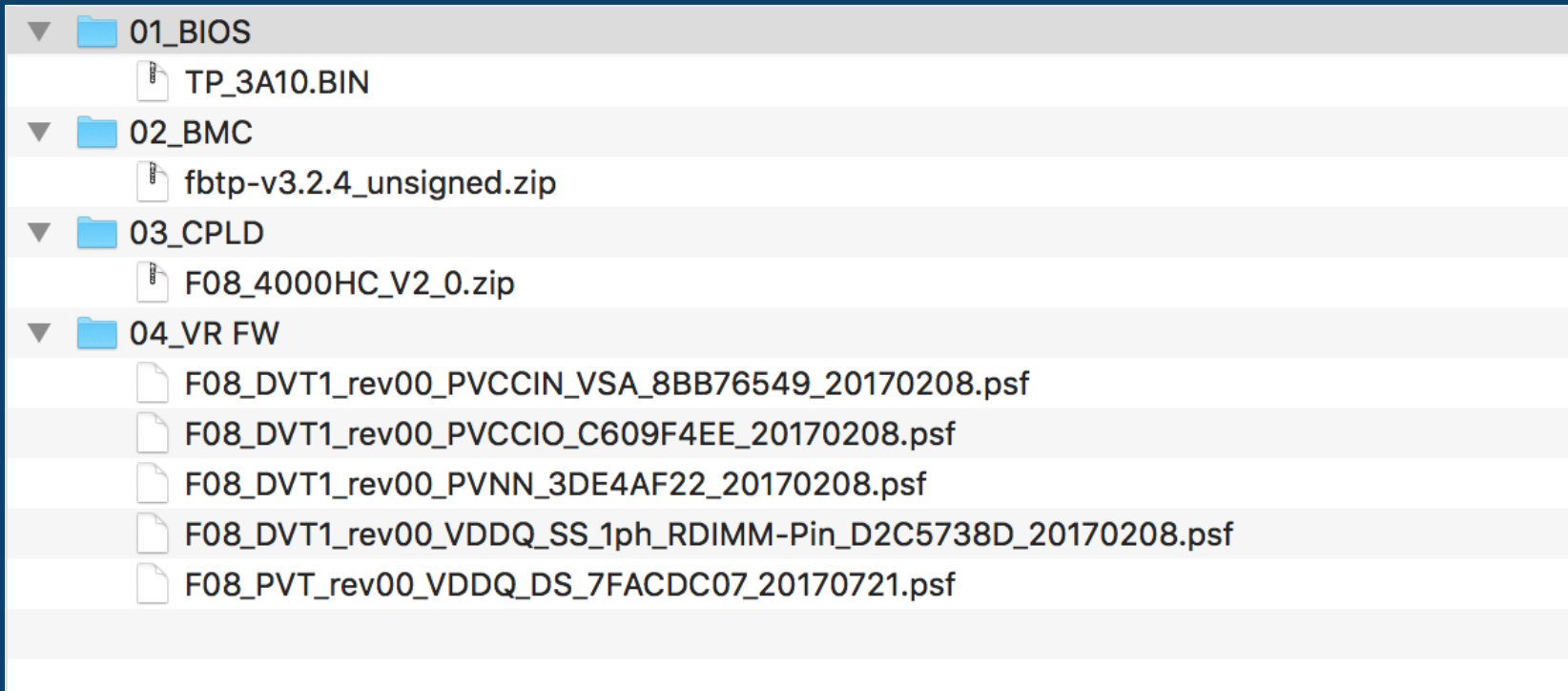
➤ Mechanical Step File



Design Files Contribution-

03_Software

➤ Software File



OCP Tenets/Principles

- **Efficiency**
 - Single/double sided design to breakthrough the dimension limitation to achieve the optimization of high-density compute use
 - Flexible SKU selection to support 2x FH slots with 1x LFF drive or 2x HH slots with 6x SFF drives (planning) according to the different IO & storage requirements
- **Scalability**
 - Modularized sled design to make one common infrastructure with wide application coverage
- **Openness**
 - Comply with ORv2 standard
- **Impact**
 - Single/double sided baseboard architecture, which places DIMMs on bottom side, to efficiently utilize the remaining space of the chassis

Summary

- Orderable SKU plan:
 - Orderable SKU:
 - Single sided with 2FH PCIe slots & 1x LFF drive
 - Planning SKU:
 - Single sided SKU with 2 HH PCIe slots & 6x SFF drives
 - Design ready/No further plan:
 - Single sided SKU with 3 PCIe slots
 - Double sided SKU with 24 DIMM & 2 PCIe slots

Thanks!!!